SALK PROPERTY

2008 ANNUAL ASSESSMENT

January 9, 2009

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Salk Property
2008 Annual Assessment

TABLE OF CONTENTS

Section	Title	Page
1.0	INTRODUCTION	1
	1.1 Project Location	1
	1.2 Installation	1
	1.2.1 Thread-leaved Brodiaea	1
	1.2.2 Diegan Coastal Sage Scrub	1
	1.2.3 Native Grassland	2
	1.2.4 Southern Willow Scrub	2
2.0	METHODS	2
	2.1 Maintenance	2
	2.2 Maintenance Monitoring	2
	2.3 2008 Annual Monitoring	3
3.0	SUCCESS CRITERIA	4
	3.1 Thread-leaved Brodiaea	4
	3.2 Diegan Coastal Sage Scrub	5
	3.3 Native Grassland	5
	3.4 Southern Willow Scrub	6
4.0	RESULTS	6
	4.1 Maintenance	6
	4.2 Maintenance Monitoring	6
	4.3 2008 Annual Monitoring	7
	4.3.1 Thread-leaved Brodiaea	7
	4.3.2 Diegan Coastal Sage Scrub	7
	4.3.3 Native Grassland	8
	4.3.4 Southern Willow Scrub	9
5.0	DISCUSSION	9
6.0	RECOMMENDATIONS	10
7.0	REFERENCES	11

LIST OF APPENDICES

Letter	Title
A	Representative Photographs
B	Plant Species Observed

LIST OF FIGURES

Number	Title	Follows Page
1	Regional Location Map	2
2	Project Location Map	2
3	Restoration Areas	2
4	Thread-leaved Brodiaea (Brodiaea filifolia) Locations within Translocation Plot	8

LIST OF TABLES

Number	Title	Page
1	2008 Site Visits	3
2	Diegan Coastal Sage Scrub Success Criteria Milestones	5
3	Native Grassland Success Criteria Milestones	5
4	Southern Willow Scrub Success Criteria Milestones	6
5	Year 2 Results for the Diegan Coastal Sage Scrub Restoration Area	7
6	Year 2 Results for the Native Grassland Restoration Area	8
7	Year 2 Results for the Southern Willow Scrub Restoration Area	9

1.0 INTRODUCTION

This report summarizes the results of the 2008 monitoring of the Salk Property Thread-leaved Brodiaea/Native Grassland/Diegan Coastal Sage Scrub/Southern Willow Scrub restoration project located in Carlsbad, California (Figures 1 and 2). Habitat restoration is occurring within a 7.44-acre portion of an on-site preserve area. Approved impacts included approximately 2.66 acres of Diegan coastal sage scrub (DCSS), 0.36 acre of native grassland (NG), 0.11 acre of thread-leaved brodiaea (*Brodiaea filifolia*) habitat, and 0.22 acre of U.S. Army Corps of Engineers (Corps) and California Department of Fish and Game (CDFG) jurisdictional waters (including 0.03 acre of wetland habitat and 0.19 acre of non-wetland Waters of the U.S.) Impacts to DCSS were mitigated at a 2:1 ratio, which included on-site preservation of 2.9 acres, conversion of 1.80 acres of non-NG to DCSS, and revegetation of 0.62 acre of manufactured slopes. Impacts to NG were mitigated at a 3:1 ratio, which included 0.07 acre of preservation and 1.01 acres restoration of non-NG to NG. One-hundred percent of the thread-leaved brodiaea was conserved by translocating the areas that would be impacted to the on-site preserve in the area where NG was being restored. Impacts to Corps/CDFG jurisdictional areas were mitigated at a 2:1 ratio for wetlands and a 1:1 ratio for non-wetlands and include the creation of 0.30 acre of southern willow scrub (SWS).

Restoration activities during the initial year of the restoration project (including installation) were completed by RECON. HELIX Environmental Planning, Inc. (HELIX) took over responsibility of monitoring and HELIX Environmental Construction Group (HECG) took over maintenance responsibilities for the project in May 2008.

1.1 PROJECT LOCATION

The restoration project is located north of Palomar Airport Road, east of El Camino Real, and between Faraday Avenue and College Boulevard in the City of Carlsbad, California (Figures 1 and 2).

1.2 INSTALLATION

Thread-leaved brodiaea/DCSS/NG/SWS installation was completed by RECON in spring 2007. The restoration areas (Figure 3) were dethatched prior to planting, seeding, or relocation. After rains had begun, follow up weed control was done using herbicides. Although all restoration is occurring in the same physical location, installation for each restoration component is described below.

1.2.1 Thread-leaved Brodiaea

Brodiaea specimens located in the project footprint were salvaged in 2006 using the cut-block method. This method was approved by the wildlife agencies and entails excavation of intact soil blocks that contained the salvaged corms. An area large enough to accommodate the salvaged blocks of soil was excavated using a backhoe and frontloading bucket.

1.2.2 Diegan Coastal Sage Scrub

Container stock was planted in a manor that is representative of this vegetation community in its natural state, using species typical of DCSS. These species included California sagebrush (*Artemisia californica*), California encelia (*Encilia californica*), black sage (*Salvia mellifera*), and purple needlegrass (*Nassella pulchra*). Installation of DCSS was completed April 24, 2007.

1.2.3 Native Grassland

Planting of the NG was completed March 23, 2007. Grassland species included purple needlegrass, foothill needlegrass (*Nassella lepida*), blue-eyed grass (*Sisyrinchium bellum*), and wish bone plant (*Mirabilis californica*).

1.2.4 Southern Willow Scrub

Planting of the SWS was completed February 28, 2007. Wetland species typical of this vegetation community were planted and include arroyo willow (*Salix lasiolepis*), black willow (*S. goodinggii*), and mule fat (*Baccharis salicifolia*).

2.0 METHODS

After installation, the restoration effort consists of (1) site maintenance; (2) regular monitoring to direct maintenance activities; and (3) annual monitoring to assess the progress of the restoration effort toward achieving final mitigation goals. Site maintenance is performed by a maintenance contractor and typically conducted more frequently in the first few years of restoration when non-native plant control is a major issue. Maintenance monitoring relies on visual observations of the site, plant health, etc. It is conducted frequently during the first few years of the restoration effort and less frequently toward the end of the maintenance and monitoring period as the site becomes more established. Monitoring memos may be provided to the client and maintenance contractor as needed to address issues. Annual monitoring consists of visual observations during the first 2 years of restoration, and quantitative measurements during the remainder of the 5-year maintenance and monitoring period. One annual report is produced for each of the 5 years of monitoring.

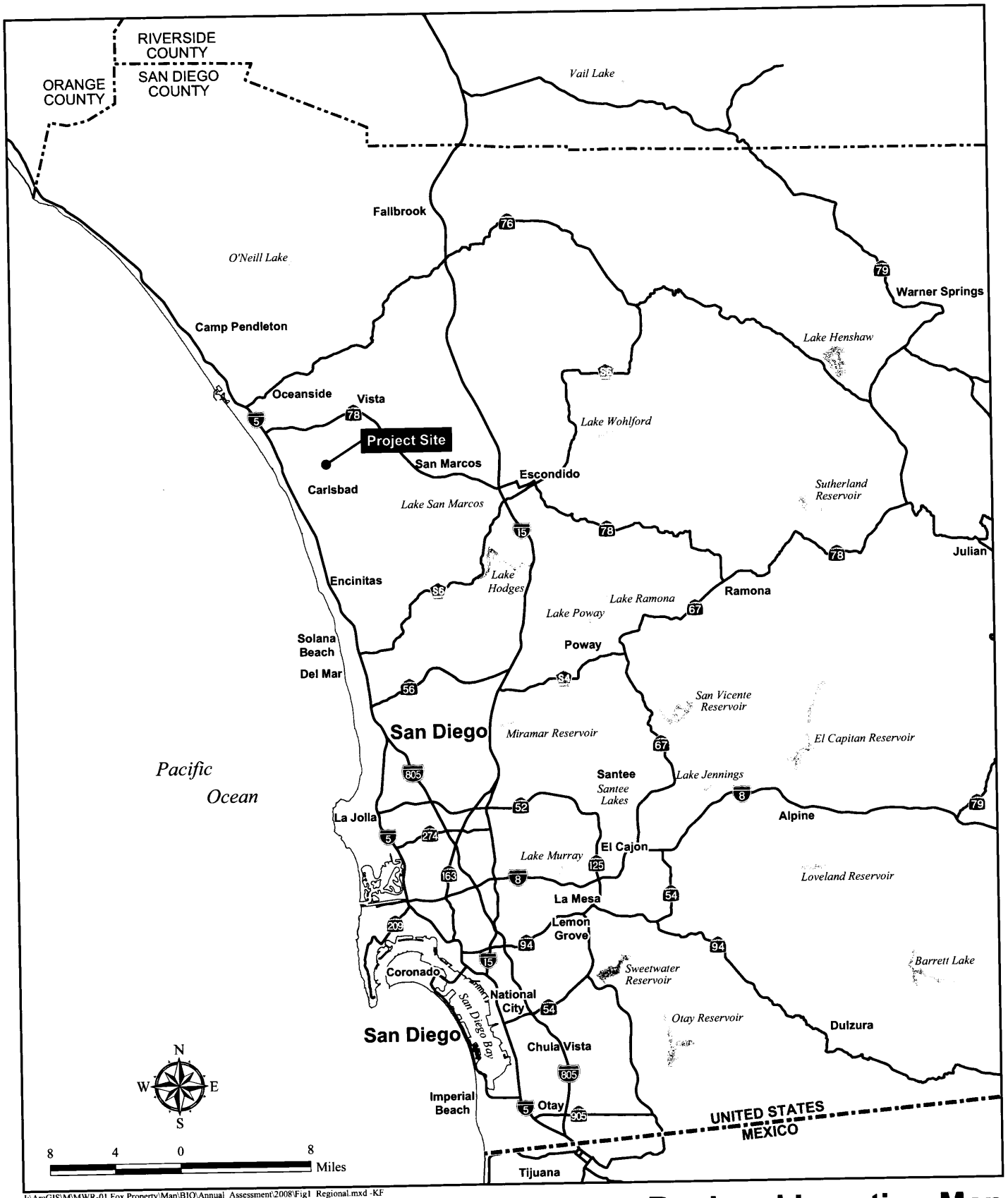
Nomenclature used in this report follows these conventions: vegetation community classifications follow Holland (1986); plants named in this report were identified according to The Jepson Manual, Higher Plants of California (Hickman 1993); and sensitive species status follows the CDFG (2008) and the U.S. Fish and Wildlife Service (USFWS; 2007).

2.1 MAINTENANCE

RECON performed maintenance activities from January through April 2008. HECG performed routine (monthly) maintenance since May 2008. Work conducted by HECG thus far has focused on weed management.

2.2 MAINTENANCE MONITORING

Maintenance monitoring visits have been conducted by HELIX biologists starting in May 2008 (Table 1). During each visit, a biologist evaluates the site condition and advises maintenance personnel of any items in need of attention.



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Regional Location Map

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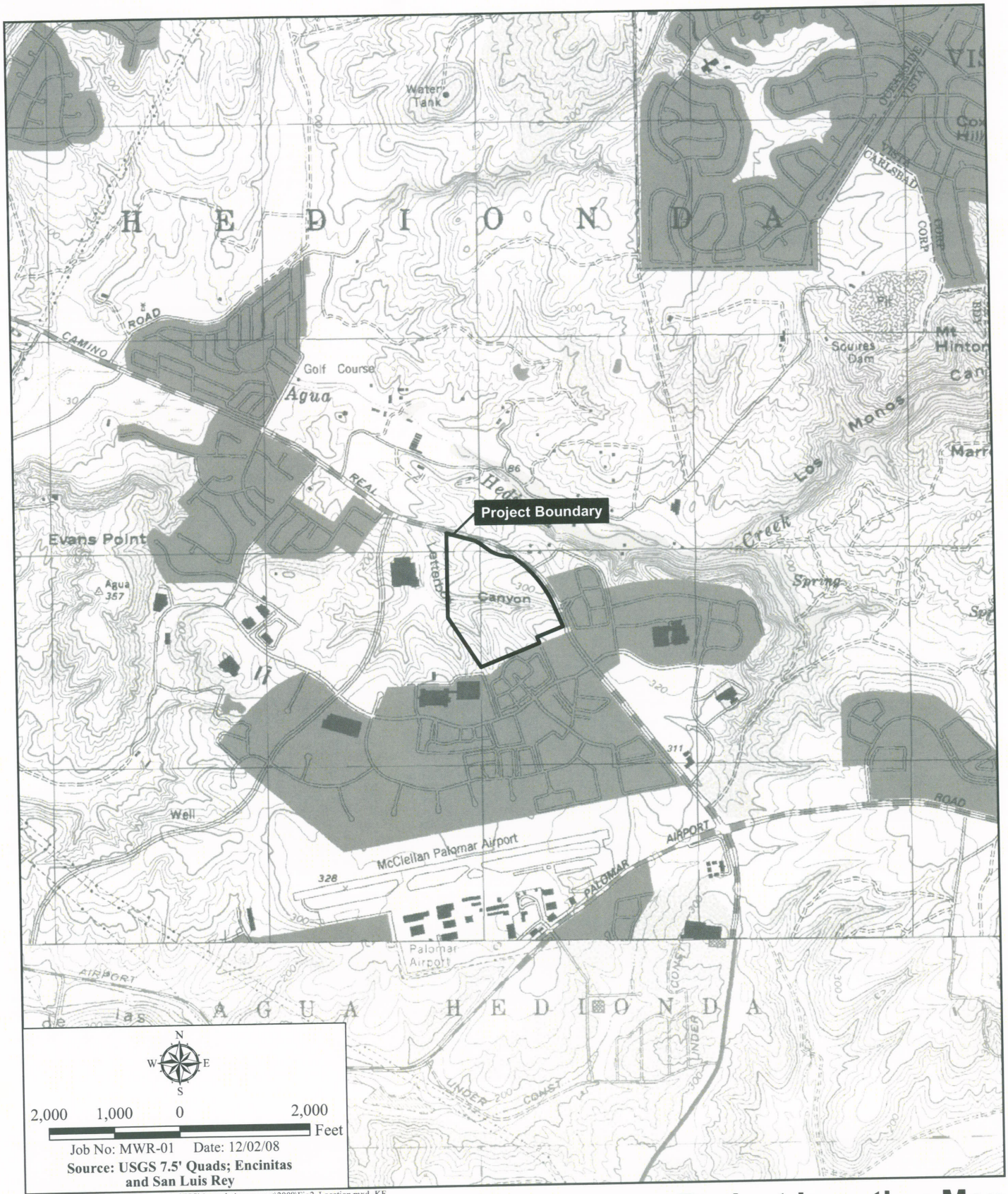
Figure 1



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Project Location Map

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Figure 2

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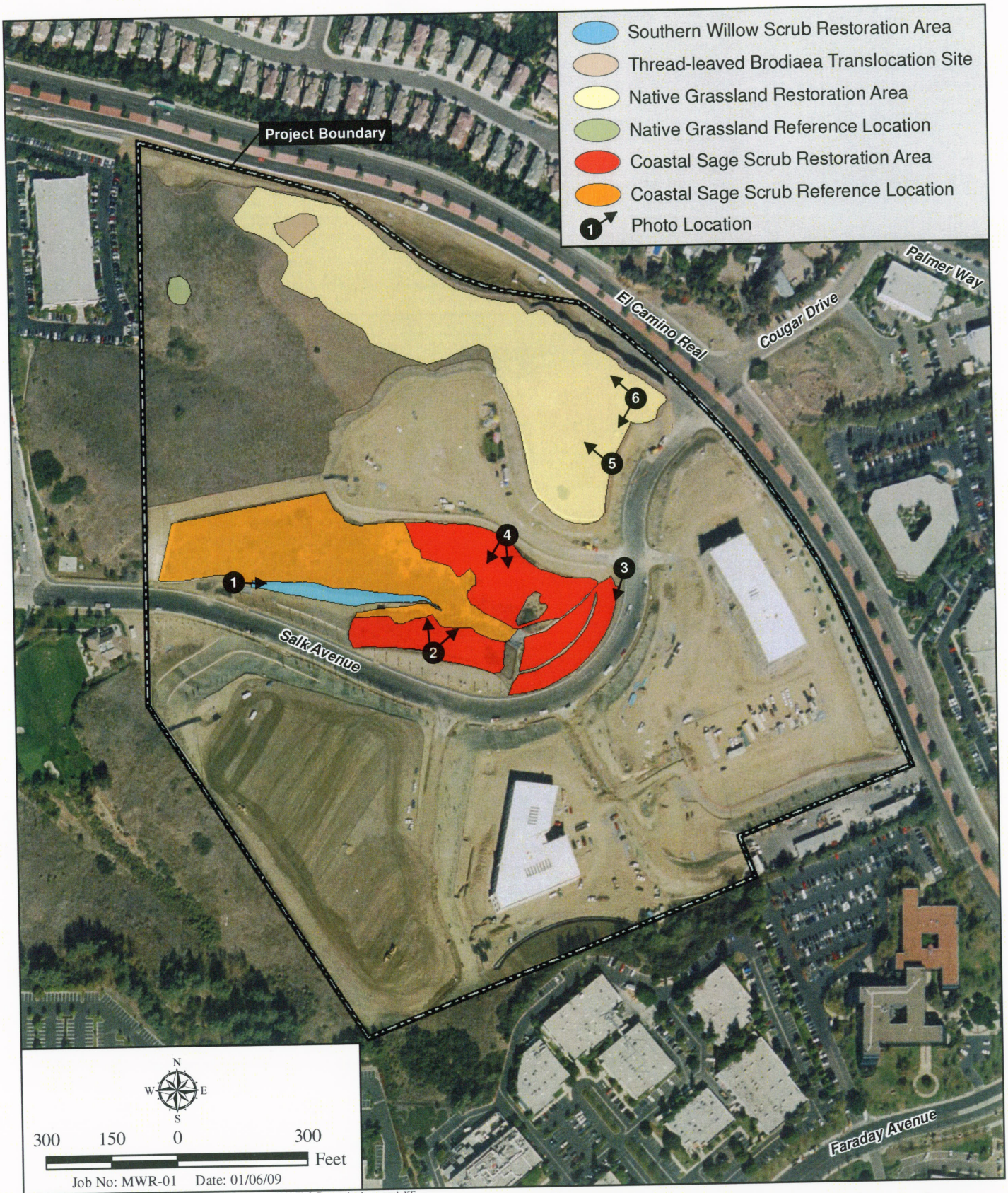

Restoration Areas

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Figure 3

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Table 1 2008 SITE VISITS		
DATE	**PERSONNEL**	**PURPOSE OF VISIT**
May 15, 2008	Jason Kurnow	Supervise hand-clearing of mustard and make sure that thread-leaved brodiaea was not impacted
May 19, 2008	Jason Kurnow Shelby Howard	Meeting with USFWS, CDFG, City of Oceanside, and client
June 6, 2008	Jason Kurnow	Annual assessment, which included mapping thread-leaved brodiaea within translocation plot
June 12, 2008	Jason Kurnow	Map thread-leaved Brodiaea within translocation plot using GPS system
June 17, 2008	Jason Kurnow	Map thread-leaved Brodiaea within translocation plot using GPS system
August 6, 2008	Jason Kurnow	Maintenance monitoring
September 26, 2008	Jason Kurnow Amy Matson	Maintenance monitoring, including placement of transects in DCSS, NG, and SWS restoration areas
October 9, 2008	Jason Kurnow Amy Matson	Maintenance monitoring, including placement of 5 sample plots in areas containing thread-leaved brodiaea to be used as references for translocated thread-leaved brodiaea
November 18, 2008	Jason Kurnow Larry Sward	Maintenance monitoring

2.3 2008 ANNUAL MONITORING

Annual monitoring of the restoration site and control areas was conducted by HELIX biologist Jason Kurnow on June 6, 2008 and by Mr. Kurnow and HELIX biologist Amy Mattson on September 26, 2008. Plants named in this report were identified according to The Jepson Manual: Higher Plants of California (Hickman, ed. 1993). Vegetative monitoring techniques are based on the project's Restoration Plan (RECON 2005). In addition, the Checklist of the Vascular Plants of San Diego County (Rebman and Simpson 2006) was referenced for common names not covered by Hickman.

Data collected during the annual monitoring events are used to determine if the project has met success criteria for the given year. For Year 1, monitoring consists of visual assessments along with photographic documentation of the site. Six photo locations were established for the restoration site during the first annual monitoring visit (Figure 3; Appendix A). An additional 15 photo points will be added during the Year 3 annual assessment (1 per endpoint of established transect). A plant species list was compiled (Appendix B), and visual estimates of ground cover were made.

According to the project's Restoration Plan, Years 2 through 5 will implement more extensive quantitative annual monitoring procedures. However, all information collected during Year 2 was only qualitative, except for the thread-leaved brodiaea translocation plot, which was quantitative. Permanent transects will be established during Year 3 monitoring, and vegetation strata data will be recorded in Years 3 through 5. Vegetation layers are categorized into herb (less than 60 centimeters [cm]), shrub (between 60 and 200 cm), and tree (greater than 200 cm) strata. When vegetation is more mature, these transects will better reflect the restoration effort progress. Five reference plots were established during Year 2 to compare trends of thread-leaved brodiaea in control areas versus the translocated population. All plots are similar in size to the translocated population. The number of individuals within each plot will be counted and compared to the translocated population.

3.0 SUCCESS CRITERIA

Success criteria for the thread-leaved brodiaea/DCSS/NG/SWS restoration areas outlined in this report are specified in the Restoration Plan (RECON 2005). Success criteria are intended to help determine the successful completion of the 5-year mitigation and monitoring program. Attainment of the success criteria indicates that the restoration is progressing toward the desired habitat function and services. Under the project's mitigation plan, native cover and species diversity (the number of species in an area) success criteria for DCSS, NG, and SWS are based on reference areas located within the open space easement. Non-native species cover and target weed species cover are based on absolute cover criteria and are not relevant to a reference area.

Species diversity and native species cover are expected to increase annually as the habitat within each restoration area grows and matures. Non-native plant species are typically a problem within habitat restoration, particularly at the beginning of a restoration project. With continued maintenance and as native habitat develops, non-native species become less problematic.

If project success criteria are not being met, corrective measures will be taken. This could include additional planting/seeding, increased maintenance efforts, change in approach to the treatment of non-native species, installation of irrigation, and any changes to irrigation schedules if irrigation is installed.

3.1 THREAD-LEAVED BRODIAEA

At the end of the 5-year monitoring period, the translocation area should exceed the number of thread-leaved brodiaea impacted (relocated) by the construction project. There are no specific cover or species richness criteria for thread-leaved brodiaea; however, the restoration plan states that the following criterion must be met in order for the brodiaea restoration project to be successful:

- The relocated population must exhibit similar patterns to that of the reference populations, which are of similar size.

To measure this, 5 populations of similar size and density are to be selected from the open space. The total number of flowering plants within each of these will be counted each year and compared to the translocated population.

3.2 DIEGAN COASTAL SAGE SCRUB

The restoration area should support 2.42 acres of viable DCSS habitat at the end of the 5-year monitoring period. Specific success criteria for species diversity, native species cover, non-native species cover, and target non-native species cover were established in the reference plan and are presented below (Table 2).

Table 2
DIEGAN COASTAL SAGE SCRUB SUCCESS CRITERIA MILESTONES

CRITERIA	YEAR				
	1		3	4	5
Minimum species diversity*	--		70%	80%	80%
Minimum percent native species cover *	--		40%	60%	75%
Maximum percent non-native species cover	5%		5%	5%	5%
Maximum percent target weed species cover†	0%		0%	0%	0%

*Relative to a reference site

†Target weed species are those listed by the California Invasive Plant Council list of "Exotic Pest Plants of Greatest Ecological Concern," with the exception of brome grasses.

For Year 2, the DCSS restoration area is expected to have species diversity equal to 50 percent of the reference area and native cover equal to at least 25 percent of the reference area (Table 2). Species diversity is the number of species in a given area. The Restoration Plan also requires non-native species to comprise less than 5 percent absolute cover in the restoration area and that there be no target weed species (Table 2).

3.3 NATIVE GRASSLAND

The restoration area should support 1.01 acres of viable NG habitat at the end of the 5-year monitoring period. Specific success criteria for species diversity, native species cover, non-native species cover, and target non-native species cover were established in the reference plan and are presented below (Table 3).

Table 3
NATIVE GRASSLAND SUCCESS CRITERIA MILESTONES

CRITERIA	YEAR				
	1		3	4	5
Minimum species diversity*	40%		70%	80%	80%
Minimum percent native species cover*	15%		40%	50%	60%
Maximum percent non-native species cover	5%		5%	5%	5%
Maximum percent target weed species cover†	0%		0%	0%	0%

*Relative to a reference site.

†Target weed species are those listed by the California Invasive Plant Council list of "Exotic Pest Plants of Greatest Ecological Concern," with the exception of brome grasses.

For Year 2, the NG restoration area is expected to have species diversity equal to 50 percent of the reference area and native cover equal to at least 25 percent of the reference area. Species diversity is the number of species in a given area. The Restoration Plan also requires non-native species to comprise less than 5 percent absolute cover in the restoration area and that there be no target weed species (Table 3).

3.4 SOUTHERN WILLOW SCRUB

The restoration area should support 0.30 acre of viable SWS habitat at the end of the 5-year monitoring period. Specific success criteria for species diversity, native species cover, non-native species cover, and target non-native species cover were established in the reference plan and are presented below (Table 4).

Table 4
SOUTHERN WILLOW SCRUB SUCCESS CRITERIA MILESTONES

CRITERIA	YEAR				
	1	[redacted]	3	4	5
Minimum species diversity*	---		70%	80%	80%
Minimum percent native species cover*	---		75%	80%	90%
Maximum percent non-native species cover	5%		5%	5%	5%
Maximum percent target weed species cover†	0%		0%	0%	0%

*Relative to a reference site

†Target weed species are those listed by the California Invasive Plant Council list of "Exotic Pest Plants of Greatest Ecological Concern," with the exception of brome grasses.

For Year 2, the NG restoration area is expected to have species diversity equal to 50 percent of the reference area and native cover equal to at least 40 percent of the reference area. Species diversity is the number of species in a given area. The Restoration Plan also requires non-native species to comprise less than 5 percent absolute cover in the restoration area and that there be no target weed species (Table 4).

4.0 RESULTS

The 2008 annual assessment results are described in detail below for thread-leaved brodiaea, DCSS, NG, and SWS habitat. Representative photographs were taken of the site (Appendix A). A list of plant species observed on site during monitoring visits is included in Appendix B.

4.1 MAINTENANCE

RECON performed maintenance activities from January through April 2008. HECG preformed routine (monthly) maintenance since May 2008.

4.2 MAINTENANCE MONITORING

During the 2008 maintenance monitoring visits, it was noted that native cover within DCSS was stagnant, with little growth and no germination observed. Native cover within the NG was unchanged through this period and remains extremely low. SWS plantings showed some increase in cover and some

germination was observed. Non-native plants (particularly non-native grass, mustard, and fennel) continue to be problematic. Cover of these species, especially in the NG, was high. HECG significantly reduced the above-ground weed biomass during 2008; however, HECG took over maintenance responsibilities after the weeds had set seed for the year.

4.3 2008 ANNUAL MONITORING

This section details the results of the 2008 annual monitoring for thread-leaved brodiaea/ DCSS/NG/SWS.

4.3.1 Thread-leaved Brodiaea

Approximately 21 thread-leaved brodiaea individuals were visually estimated within the translocation area (Figure 4). All observations were located around the outer edge of the translocation plot. Non-native species (primarily grasses) were extremely dense within the reference plots, which were estimated at 100 percent cover. Thread-leaved brodiaea data within these plots was not taken, as it was difficult to find, and the risk of impacting this species while trying to locate individuals was great. This data will be taken in 2009.

4.3.2 Diegan Coastal Sage Scrub

In Year 2, the DCSS restoration area had high native species diversity (15 species), moderate native species cover (41 percent), and high non-native species cover (50 percent; Table 5). Target weed species (black mustard and fennel) were observed within the restoration area.

Table 5
YEAR 2 RESULTS FOR THE DIEGAN COASTAL SAGE SCRUB RESTORATION AREA

CRITERION	Reference Site	Year 2 Standard	Restoration Area
Species diversity	8	4*	15
Native species cover	90%	23%*	41%
Non-native species cover	20%	5%**	50%
Target weed species cover†	20%	0%**	10%

†Target weed species are those listed by the California Invasive Plant Council list of "Exotic Pest Plants of Greatest Ecological Concern," with the exception of brome grasses
*Minimum amounts needed to meet Year 2 success criteria
**Maximum percentage allowable to meet Year 2 success criteria

Most of the native plantings were alive, but showed little signs of recent growth. Dominant native species included California encelia and purple needlegrass. Native cover was highest on the eastern (manufactured) slope with estimated native cover at 98 percent. At this location, approximately 95 percent of the cover is comprised of purple needlegrass. Native cover was estimated at 15 percent on the southern slope and 25 percent on the northern slope. Germination of native species was not observed, nor were there observations of young plants.

A majority of the non-native cover observed was from grasses and other annuals that had perished earlier in the year. Non-native cover was lowest on the eastern slope at less than 5 percent cover, and highest on the southern slope at 75 percent cover. The northern slope was estimated to have 60 percent non-native cover. Target weed species (fennel and black mustard) were present within the restoration area.

Data was collected from a DCSS reference area within the open space area in 2008 (Figure 3). The DCSS reference area had 90 percent native species cover, 20% non-native cover, and 8 native species (species diversity). Native species within the reference area was dominated by California encelia and black sage. California adolphia is found throughout this area as well. The most notable non-native species include black mustard and fennel.

The DCSS restoration area met the success criteria for species diversity and native species cover, but did not meet non-native species cover or target weed cover (Table 5).

4.3.3 Native Grassland

In Year 2, the NG restoration area had moderate native species diversity (6 species), low native species cover (2 percent), and high non-native species cover (100 percent; Table 6). Target weed species (black mustard and fennel) were observed within the restoration area.

Table 6
YEAR 2 RESULTS FOR THE NATIVE GRASSLAND RESTORATION AREA

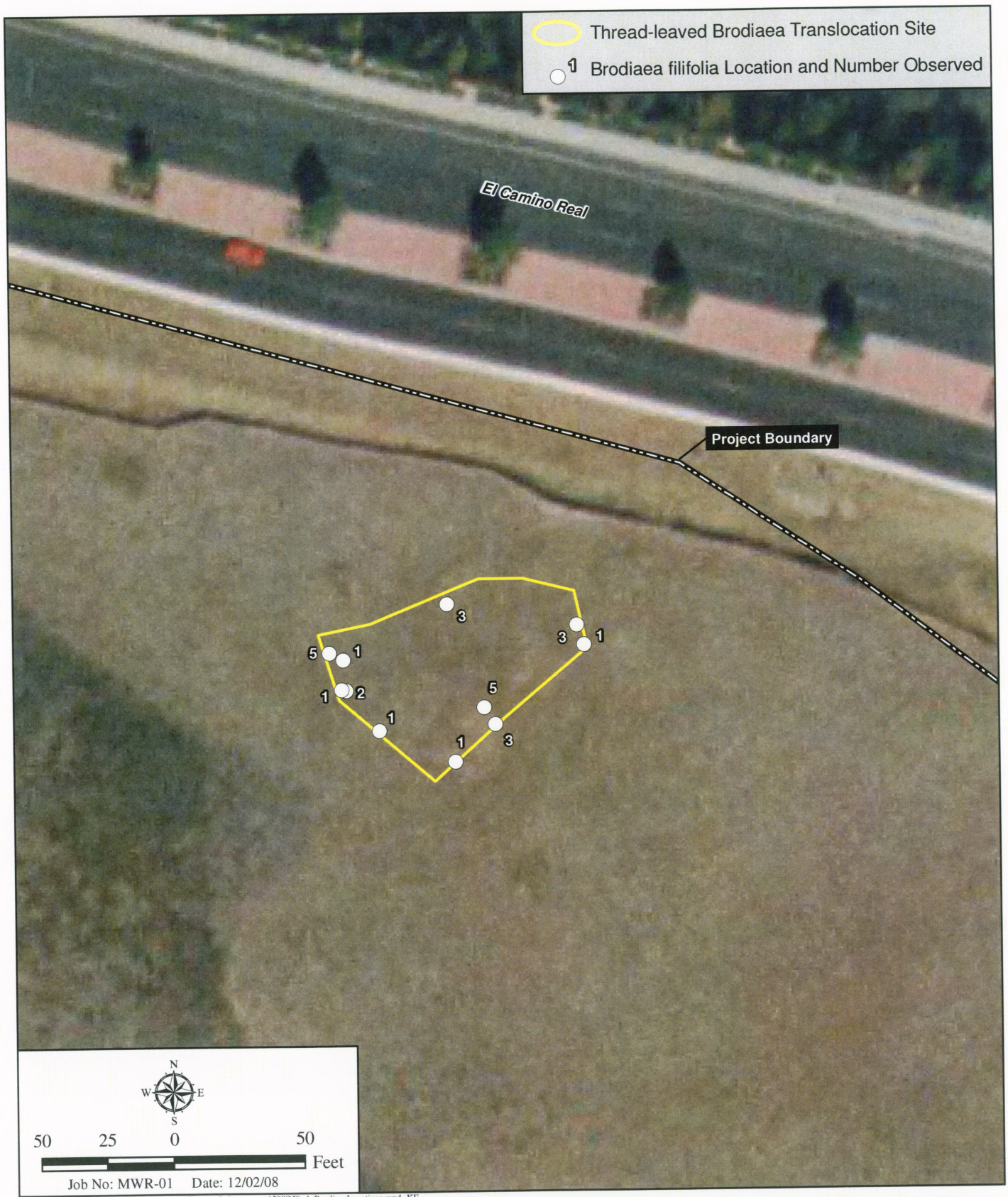
CRITERION	Reference Site	Year 2 Standard	Restoration Area
Species diversity	1	*	6
Native species cover	20%	23%*	2%
Non-native species cover	100%	5%**	100%
Target weed cover†	20%	0%**	20%

†Target weed species are those listed by the California Invasive Plant Council list of "Exotic Pest Plants of Greatest Ecological Concern," with the exception of brome grasses
*Minimum amounts needed to meet Year 2 success criteria
**Maximum percentage allowable to meet Year 2 success criteria.

This area is dominated by non-native species such as non-native grasses (*Avena* sp., *Bromus* sp., etc.) and black mustard (*Brassica nigra*). Only a couple of native grasses were observed, which were scattered throughout the site.

Data was collected from an NG reference area within the open space area in 2008 (Figure 3). The NG reference area had 20 percent native species cover, 100 percent non-native cover, and 1 native species (species diversity). The only native species within the reference area was purple needlegrass. Dominant non-native species include various non-native grasses and fennel.

The NG restoration area met the success criteria for species diversity but did not meet native species cover, non-native species cover, or target weed cover (Table 6).



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Thread-leaved Brodiaea (Brodiaea filifolia) Locations within Translocation Plot

2008 ANNUAL ASSESSMENT FOR THE SALK PROPERTY

Figure 4

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4.3.4 Southern Willow Scrub

Native species cover was estimated at 45 percent, and 19 native species were observed (Table 7). Most native cover comes from shrub and tree species. Dominant species include black willow, mule fat, and arroyo willow. Signs of the clearwing moth (a native species whose larvae boars into willow trees, and other riparian tree species) were observed on some of the arroyo willows. Non-native cover was estimated at less than 5 percent, and 1 target weed (salt cedar) was observed.

Data was not collected from a reference area in 2008 because access to a suitable reference site of the project could not be obtained. Data from a suitable reference site will be collected in 2009. Table 7 presents the results from the 2008 data collection.

Table 7
YEAR 2 RESULTS FOR THE SOUTHERN WILLOW SCRUB RESTORATION AREA

Criterion	Reference Site	Year 2 Standard	Restoration Area
Species diversity	N/A	N/A	6
Native species cover	N/A	N/A	2%
Non-native species cover	N/A	N/A	100%
Target weed cover†	N/A	N/A	20%

5.0 DISCUSSION

At the end of 2008 (Year 2), SWS is progressing towards the final success criteria, but the DCSS and NG restoration areas need to make significant progress to achieve final success criteria.

Year 2 criterion for DCSS native cover has been met, but most of the cover comes from native grasses located on the eastern slope (Figure 3). On this slope, 95 percent of the cover is comprised of native grasses. In order for this area to be considered DCSS, densities of typical sage scrub species will need to increase. Non native cover is currently high, but can be managed through monthly weeding events. The primary issue deals with obtaining native species densities required for project sign-off.

DCSS species have persisted thus far, but there has been little growth or germination of native species. In addition, only approximately 65 percent of the DCSS container stock was installed by RECON in 2007 (2,472 plants [see Tables 7 and 8 of the Year 1 report] of the 3,781 required by the Restoration Plan).

In order for the DCSS portion of the restoration area to do well certain approaches should be used to promote both plant growth and germination. The most important approach is to install an irrigation system. Given that San Diego County has had several below average rainfall years, coupled with the timing of the rain events, it is very difficult to promote seed germination. Successful seeding in low rainfall years requires very good timing; however, if 2009 is another drought year, additional seeding would likely have either no effect or minimal effect unless irrigation is installed. Once an irrigation system is set up, the remaining 1,309 plants should be installed and the site should be re-seeded.

Restoration in the NG is more complicated because maintenance activities are limited by either the timing and/or presence of thread-leaved brodiaea. The 2 major issues affecting the NG restoration are the abundance of non-native vegetation and the lack of native grasses and other native vegetation.

When HELIX began monitoring the project in May 2008, nearly the entire NG restoration area contained mustard, fennel, and non-native grasses that had already set seed. As a result, there is a tremendous non-native seed bank. Installation of the NG area in 2007 included 3,930 container stock (RECON 2008), nearly all of which are now dead. There is likely very little native seed in the seed bank. HELIX and HECG are anticipating a large number of weeds to germinate in 2009, and activities will initially focus on weed control prior to new planting and/or seeding.

Post-emergent herbicide currently can only be used in this area when thread-leaved brodiaea is not active. However, a majority of the non-native species germinate within the time period that thread-leaved brodiaea is active. To allow for weed control (and not impact thread-leaved brodiaea), the following approach should be implemented: Beginning in January 2009, a restoration specialist will conduct site visits prior to any weeding activities within the native grassland restoration area. If thread-leaved brodiaea is observed, the height will be noted and non-native species above this height would be treated with a post-emergent herbicide consisting of 30 percent glyphosate and 70 percent water. A sponge bar applicator would be used on a rig where height can be adjusted. This rig would be mounted to either a small tractor and/or light weight trailer. Two passes in opposite directions would occur to ensure adequate contact is made. Areas where native species occur would be avoided and would be treated by hand. All work would be supervised by the restoration specialist.

Using post-emergent herbicide during the active time of year for thread-leaved brodiaea requires approval from the regulatory agencies. This strategy should significantly reduce non-natives within the NG and allow greater success for native grasses to germinate. Once non-native plant densities are reduced to a more manageable level in 2009, the NG restoration area will need to be seeded.

Seeding would be necessary as the site was only planted with grass plugs and almost all have died. There is no seed stock in the soil and if conditions remained the same, there would be no new growth. Annual seeding of the site with native grassland species should occur in the winter prior to a storm event. This would increase the likelihood of germination, as the site is not irrigated. If approved by the agencies, hand watering areas where thread-leaved brodiaea does not occur would be beneficial if incorporated with this strategy.

6.0 RECOMMENDATIONS

- Implement weeding strategy in NG restoration area that reduces non-native species and does not impact thread-leaved brodiaea. Use post-emergent herbicide during time of year that thread-leaved brodiaea is not active. Continue this approach during time of year that thread-leaved brodiaea is active under supervision of a restoration specialist. When thread-leaved brodiaea is up, only non-native species taller than thread-leaved brodiaea would be treated with a post-emergent herbicide, which would be applied with a sponge bar applicator.
- Implement plan to maximize germination and cover for native grassland area. Seed native grassland with native grass seed mix annually during the appropriate time of year (determined by restoration specialist, typically January). Include establishment of watering to aid in native grass survival; watering should be done under supervision of the restoration specialist.
- Plant and re-seed DCSS restoration areas. Plant remainder of the site with the 1,309 1-gallon container stock not planted during site installation and re-seed site.
- Install irrigation in the DCSS areas.

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APPENDIX A

REPRESENTATIVE PHOTOGRAPHS

Photo Point 1– southern willow scrub restoration area, looking east.

Photo Point 2 – northern diegan coastal sage scrub restoration slope, looking north/northeast.

Photo Point 3 – eastern diegan coastal sage scrub restoration slope, looking south

Photo Point 4 – southern diegan coastal sage scrub restoration slope, looking south

Photo Point 5 - native grassland restoration area, looking northwest

Photo Point 6 - eastern portion of native grassland restoration area, looking northeast to northwest.

APPENDIX B

PLANT SPECIES OBSERVED

Appendix B
PLANT SPECIES OBSERVED – SALK PROPERTY

NATIVE GRASSLAND

Scientific Name	Common Name
*Avena barbata**	slender wild oat
Baccharis pilularis	coyote bush
*Brassica nigra**	black mustard
Brodiaea filifolia	thread-leaved brodiaea
Bromus madritensis ssp. *rubens**	red brome
Calystegia sp.	morning glory
Eremocarpus setigerus	dove weed
*Foeniculum vulgare**	fennel
Nassella pulchra	purple needlegrass
Sisyrinchium bellum	blue eyed grass
*Sonchus oleraceus**	sow thistle
*Vulpia myuros**	fescue

DIEGAN COASTAL SAGE SCRUB

Scientific Name	Common Name
Artemisia californica	California sagebrush
*Avena barbata**	slender wild oat
Baccharis pilularis	coyote bush
*Brassica nigra**	black mustard
Conyza sp.	horseweed
Encelia californica	California encelia
Eremocarpus setigerus	dove weed
*Foeniculum vulgare**	fennel
Grindelia camporum	gumplant
Isocoma menziesii	goldenbush
Isomeris arborea	bladderpod
Malosma laurina	laurel sumac
Nassella pulchra	purple needlegrass
Opuntia littoralis	coast prickly pear
Rhus ovata	sugar bush
Salvia apiana	white sage
Salvia mellifera	black sage
Sisyrinchium bellum	blue eyed grass
*Sonchus oleraceus**	sow thistle
*Vulpia myuros**	fescue

Appendix B (cont.)
PLANT SPECIES OBSERVED – SALK PROPERTY

SOUTHERN WILLOW SCRUB

Scientific Name	Common Name
Artemisia californica	California sagebrush
Artemisia douglasiana	California mugwort
Baccharis pilularis	coyote bush
Baccharis salicifolia	mule fat
Conyza sp.	horseweed
Distichlis spicata	salt grass
Iva hayesiana	San Diego marsh elder
Juncus acutus	spiny rush
*Marrubium vulgare**	horehound
Muhlenbergia rigens	deergrass
*Picris echioides**	bristly oxtounge
Pluchea odorata	marsh fleabane
*Polypogon monspeliensis**	rabbitsfoot grass
Platanus racemosa	Western sycamore
Rosa californica	wild rose
Salix exigua	sandbar willow
Salix gooddingii	black willow
Salvix lasiolepis	arroyo willow
Sambucus mexicana	blue elderberry
Tamarix sp.*	salt cedar
Typha sp.	cattail
Vitis girdiana	desert wild grape
Xanthium strumarium	cocklebur

*Non-native species.